REMARKS

Claims 1, 3-5, 7-12, 14-17, 19, 22, 24-27, 30, 31, 33-35 and 39 have been amended to improve form and claims 2, 6, 13, 18, 20, 21, 28, 29 and 40 have been canceled without prejudice or disclaimer. Claims 1, 3-5, 7-12, 14-17, 19, 22-27, 30-39 and 41 are now pending in this application.

Claim 5 has been objected to under 37 CFR 1.75(c) as being of improper dependent form. More particularly, the Office Action states that claim 5 does not further limit original claim 2. The applicants respectfully disagree.

Initially, it is noted that claim 5 has been amended to depend from claim 1. Claim 1, as amended, recites filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal, which is similar to a feature previously recited in claim 2. Claim 5 recites that the method further comprises de-spreading the signal by the second node using a spreading code associated with the signal and determining the identity of the first node from the de-spread signal. Support for these features is given, for example, at paragraph 53 at page 19. These features are clearly not included in amended claim 1. Therefore claim 5 clearly satisfies the requirements of 37 CFR 1.75(c). Accordingly, withdrawal of the objection to claim 5 is respectfully requested.

Claim 1-3, 5-8, 19-22, 27-27, 29, 32 and 34-38 have been rejected under 35 U.S.C. § 103(b) as being unpatentable over alleged admitted prior art in view of Ramanathan (U.S. Patent No. 5,850,592) and further in view of Beckwith (U.S. Patent No. 6,766,143). The rejection is respectfully traversed.

Claim 1 recites a method of performing neighbor discovery in a wireless network. Claim 1, as amended, recites broadcasting the signal from the first node, the broadcasted signal having a low probability of detection by an unintended receiver. The Office Action points to paragraph 4 of the present specification (referred to by the Examiner as applicant admitted prior art) as disclosing broadcasting a beacon signal from a first node (Office Action – page 3). As discussed at paragraph 4 of the specification, conventional ad hoc wireless networks employ beacons as a way in which network nodes can perform neighbor discovery. As further discussed at paragraph

5 of the specification, in conventional practices, beacons are typically sent at regular intervals at the highest power level possible to ensure that other nodes have the highest feasible chance of receiving the beacons. Therefore, the alleged admitted prior art does not disclose or suggest broadcasting a signal (for alerting other nodes in the network of a presence of the first node) from a first node, where the broadcasted signal has a low probability of detection by an unintended receiver, as required by amended claim 1. In contrast, the alleged admitted prior art teaches away from this feature. Ramanathan and Beckwith also do not disclose or suggest this feature.

Claim 1, as amended, also recites filtering the received signal at the second node using a filter matched to a spreading sequence or code used to spread the signal. A similar feature was previously recited in original claim 6. As to this feature, the Office Action states that Beckwith discloses filtering the received signal and points to col. 2, lines 3-20 of Beckwith for support (Office Action – page 6). Beckwith at col. 2, lines 3-30 may disclose a direct sequence spread spectrum system that combines a data stream with a pseudo random numerical sequence and a receiver that uses the pseudo random code to de-spread the signal. Beckwith, however, has nothing to do with performing neighbor discovery in a wireless network and does not disclose filtering a signal with a filter matched to a spreading sequence or code used to spread the signal, where the signal is for alerting other nodes in the network of the presence of the first node. In contrast, Beckwith simply discloses a wireless network in which a transmitter transmits data to a receiver using a pseudo-random code and the receiver uses the pseudo-random code to decode the signal.

Claim 1, as amended, also recites calculating an energy associated with the filtered signal. The Office Action states that Beckwith discloses this feature and points to col. 2, lines 3-20 for support (Office Action – page 6). Beckwith at col. 2, lines 3-20, as discussed above, merely discloses using a pseudo-random code to de-spread received data. The applicants note that the Office Action also relies upon Ramanathan as disclosing calculating an energy associated with a received signal (Office Action – page 4). Ramanathan, however, as admitted in the Office Action, does not disclose that the signal for alerting other nodes in the network of the presence of the first node is a spread signal. Ramanathan, therefore, cannot disclose filtering the signal using a filter matched to a spreading sequence or code used to spread the signal or

calculating an energy associated with the filtered signal, as required by amended claim 1. Therefore, the applicants assert that the combination of the alleged admitted prior art, Ramanathan and Beckwith cannot be fairly construed to disclose or suggest each of the features of amended claim 1.

In addition, even if, for the sake of argument, the combination of references could be construed to disclose or suggest each of the features of amended claim 1, the applicants assert that the motivation for combining the alleged admitted prior art, Ramanathan and Beckwith does not satisfy the requirements of 35 U.S.C. § 103. For example, the Office Action states that it would have been obvious to combine teachings of Beckwith with the alleged admitted prior art and Ramanathan "to provide a increased immunity to unwanted interference, fading and noisy environment, thus providing a reliable communication link between nodes during the node discovery process" (Office Action – page 5). This alleged motivation is merely a conclusory statement providing an alleged benefit of the combination. No portion of either reference is pointed to as providing objective motivation for the combination. Such motivation does not satisfy the requirements of 35 U.S.C. § 103.

For at least these reasons, withdrawal of the rejection and allowance of claim 1 are respectfully requested.

Claims 3, 5, 7 and 8 depend on claim 1 and are believed to be allowable for at least the reasons claim 1 is allowable. In addition, these claims recite additional features not disclosed or suggested by the cited art.

For example, claim 5 recites de-spreading the signal by the second node using a spreading code associated with the signal and determining the identity of the first node from the de-spread signal. Neither the alleged admitted prior art nor Ramanathan, as admitted in the Office Action, disclose transmitting a spread signal. Therefore, neither the alleged admitted prior art nor Ramanathan can disclose or suggest these features. Beckwith, as discussed above, merely discloses using a receiver to de-spread data transmitted using a pseudo random code (Beckwith – col. 2, lines 3-12). Beckwith, however, does not disclose or suggest determining the identity of the first node from the de-spread signal, as recited in claim 5.

For at least this additional reason, withdrawal of the rejection and allowance of claim 5 are respectfully requested.

Claim 8, as amended, recites that the broadcasting includes at least one of broadcasting the signal at random or pseudorandom intervals or broadcasting the signal using a combination of regular and random or pseudorandom intervals. None of the cited art discloses or suggests this feature.

For at least this additional reason, withdrawal of the rejection and allowance of claim 8 are respectfully requested.

Claim 19, as amended, recites that the first node comprises a filtering device configured to filter the received signal using a filter matched to a spreading sequence or code used to spread the signal and a processing device coupled to the filtering device, the processing device configured to receive the filtered signal, calculate an energy associated with the filtered signal, determine whether the energy exceeds a threshold, and identify the second node as a neighbor node when the energy exceeds the threshold. Similar to the discussion above with respect to claim 1, the combination of cited references does not disclose or suggest these features.

Claim 19, as amended, also recites a second antenna and a transmitter configured to transmit a message to the second node via the second antenna, the message comprising information identifying the second node. None of the alleged admitted prior art, Ramanathan and Beckwith discloses or suggests this feature.

For at least these reasons, the combination of cited references does not disclose or suggest the features of amended claim 19. In addition, the applicants submit that the motivation to combine the cited references does not satisfy the requirements of 35 U.S.C. § 103 for the reasons discussed above with respect to claim 1.

For at least these reasons, withdrawal of the rejection and allowance of claim 19 are respectfully requested.

Claims 22, 25 and 26 depend on claim 19 and are believed to be allowable for at least the reasons claim 19 is allowable. In addition, these claims recite additional features not disclosed or suggested by the cited art.

For example, claim 25 recites features similar to, but of different scope than, claim 5. For reasons similar to those discussed above with respect to claim 5, withdrawal of the rejection and allowance of claim 25 are respectfully requested.

Claim 27 recites features similar to, but of different scope than, claim 19. For reasons similar to those discussed above with respect to claim 19, withdrawal of the rejection and allowance of claim 27 are respectfully requested.

Claim 32 depends on claim 27 and is believed to be allowable for at least the reasons claim 27 is allowable. In addition, claim 32 recites features similar to, but of different scope than, claim 5. For reasons similar to those discussed above with respect to claim 5, withdrawal of the rejection and allowance of claim 32 are respectfully requested.

Claim 34 recites features similar to, but of different scope than, claim 1. For reasons similar to those discussed above with respect to claim 1, the combination of the alleged admitted prior art, Ramanathan and Beckwith does not disclose or suggest each of the features of claim 1.

In addition, claim 34, as amended, recites that the means for broadcasting the signal from the first node uses an omni-directional antenna or a set of sectored antennas and the means for transmitting a message from the second node to the first node uses a directional antenna, the message comprising information identifying the second node.

The applicants note that a similar feature is recited in claim 4. As to this feature, the Office Action states that Proctor, Jr. (U.S. Patent Publication No. 2004/0196822; hereinafter Proctor) discloses this features and points to paragraphs 9-12 of Proctor for support (Office Action – page 12). The applicants respectfully disagree.

Proctor discloses that in a first receive mode, a controller sets the antenna to an omni-directional setting when a received signal has not yet been identified or a link layer connection

has not been established (Proctor – paragraph 9). Proctor further discloses that a second receiver mode may be used in which the antenna is set to a specific directional angle after a receive signal has been identified or a link layer connection has been established (Proctor – paragraph 9). Proctor, however, does not disclose or suggest means for broadcasting a signal (for alerting other nodes in the network of the presence of the first node) using an omni-directional antenna or a set of sectored antennas as recited in amended claim 34. In contrast, Proctor discloses setting a receiver in a first mode to an omni-directional receiver setting.

In addition, even if, for the sake of argument, the combination of the alleged admitted prior art, Ramanathan, Beckwith and Proctor disclosed each of the features of amended claim 34, the applicants assert that the motivation for combining these references does not satisfy the requirements of 35 U.S.C. § 103. For example, the Office Action states that it would have been obvious to combine Proctor with the other cited art "to provide a reliable communication link between nodes since the transmission/receiving energy is focused" (Office Action – page 12). The applicants assert that the alleged motivation is merely a conclusory statement providing an alleged benefit of the combination. Such motivation does not satisfy the requirements of 35 U.S.C. § 103.

For at least these reasons, withdrawal of the rejection and allowance of claim 34 are respectfully requested.

Claim 35, as amended, recites features similar to, but of different scope than, claims 1 and 34. For reasons similar to those discussed above with respect to claims 1 and 34, withdrawal of the rejection and allowance of claim 35 are respectfully requested.

Claims 36-38 are dependent on claim 35 and are believed to be allowable for at least the reasons claim 35 is allowable. In addition, these claims recite additional features not disclosed or suggested by the cited art.

For example, claim 37 recites broadcasting the spreading sequence a number of times and adjusting the power level associated with the broadcasting based on whether a reply message, indicating that at least the second node has detected the spreading sequence, has been received by the first node. The Office Action has not particularly addressed these features.

Therefore, a prima facie case under 35 U.S.C. § 103 has not been established with respect to claim 37. In any event, none of the cited art discloses or suggests these features.

Claim 38 recites that the method includes changing the spreading sequence after a number of broadcasts. The Office Action has not particularly addressed this feature. Therefore, a prima facie case under 35 U.S.C. § 103 has not been established with respect to claim 38. In any event, none of the cited art discloses or suggests this feature.

For at least these additional reasons, withdrawal of the rejection and allowance of claims 37 and 38 are respectfully requested.

Claims 9-12, 14-17, 23, 28, 30 and 33 have been rejected under 35 U.S.C. § 103 as being unpatentable over the alleged admitted prior art in view of Ramanathan, Beckwith and further in view of Asghar et al. (U.S. Patent No. 6,218,931; hereinafter Asghar). The rejection is respectfully traversed.

Claim 9, as amended, recites a first node that includes an omni-directional antenna; a directional antenna; a processor configured to generate a spreading sequence that identifies the first node; a first transmitter configured to broadcast the spreading sequence using the omni-directional antenna; a receiver configured to receive a message from a second node, the message identifying the second node and indicating that the second node is a neighbor node; and a second transmitter configured to transmit data to the second node using the directional antenna after the message from the second node is received.

Similar to the discussion above with respect to claim 34 and as admitted in the Office Action, the combination of the alleged admitted prior art, Ramanathan and Beckwith does not disclose or suggest the use of an omni-directional antenna and a directional antenna as recited in amended claim 9. In addition, as discussed above with respect to claim 34, Proctor also does not disclose or suggest these features. Further, Asghar also does not disclose or suggest the use of an omni-directional antenna or directional antenna.

Therefore, the combination of the alleged admitted prior art, Ramanathan, Beckwith and Asghar does not disclose or suggest each of the features of amended claim 9.

In addition, even if, for the sake of argument, the combination of the alleged admitted prior art, Ramanathan, Beckwith and Asghar disclosed each of the features of amended claim 9, the applicants assert that the motivation for combining these references does not satisfy the requirements of 35 U.S.C. § 103. For example, the Office Action states that it would have been obvious to combine Asghar with the other cited art "to provide increased noise immunity and to be able to identify the node from which the signal is transmitted" (Office Action – page 9). The applicants assert that the alleged motivation is merely a conclusory statement providing an alleged benefit of the combination. Such motivation does not satisfy the requirements of 35 U.S.C. § 103.

For at least these reasons, withdrawal of the rejection and allowance of claim 9 are respectfully requested.

Claims 10-12 are dependent on claim 9 and are believed to be allowable for at least the reasons claim 9 is allowable. In addition, these claims recite additional features not disclosed or suggested by the cited art.

For example, claim 10, as amended, recites that the transmitter is configured to broadcast the spreading sequence at random intervals, pseudorandom intervals or a combination of regular and random or pseudorandom intervals. None of the cited art discloses or suggests this feature.

Claim 11, as amended, recites that the processor is further configured to generate at least a second spreading sequence that identifies the first node, wherein the transmitter is configured to broadcast the second spreading sequence at random or pseudorandom intervals. None of the cited art discloses or suggests these features.

For at least these additional reasons, withdrawal of the rejection and allowance of claims 10 and 11 are respectfully requested.

Claim 14, as amended, recites features similar to, but of different scope, than claim 9. For reasons similar to those discussed above with respect to claim 9, withdrawal of the rejection and allowance of claim 14 are respectfully requested.

Claims 15-17 are dependent on claim 14 and are believed to be allowable for at least the reasons claim 14 is allowable. In addition, these claims recite additional features not disclosed or suggested by the cited art.

For example, claims 15 and 16, as amended, recite features similar to, but of different scope than, claims 10 and 11. For reasons similar to those discussed above with respect to claims 10 and 11, withdrawal of the rejection and allowance of claims 15 and 16 are respectfully requested.

Claims 23, 30 and 33 variously depend on claims 19 and 27 and are believed to be allowable for at least the reasons their respective independent claims are allowable. Accordingly, withdrawal of the rejection and allowance of claims 23, 30 and 33 are respectfully requested.

Claims 4 and 24 have been rejected under 35 U.S.C. § 103 as being unpatentable over the alleged admitted prior art in view of Ramanathan, Beckwith and further in view of Proctor. The rejection is respectfully traversed.

Claims 4 and 24 are dependent on claims 1 and 19 respectively and are believed to be allowable for at least the reasons their respective independent claims are allowable. Proctor does not remedy the deficiencies in the combination of cited references discussed above with respect to claims 1 and 19.

For at least these reasons, withdrawal of the rejection and allowance of claims 4 and 24 are respectfully requested.

Claims 13, 18, 31, 40 and 41 have been rejected under 35 U.S.C. § 103 as being unpatentable over the alleged admitted prior art in view of Ramanathan, Beckwith, Asghar and further in view of Proctor. The rejection is respectfully traversed.

Claims 13, 18 and 40 have been canceled without prejudice or disclaimer, thereby rendering the rejection of these claims moot.

Claim 31 is dependent on claim 27 and is believed to be allowable for at least the reasons claim 27 is allowable. Accordingly, withdrawal of the rejection and allowance of claim 31 are respectfully requested.

Claim 41 recites a first node that includes a plurality of directional antennas; a receiver configured to receive a signal from a second node in the wireless network over a period of time; a processing device configured to: identify the second node as a neighbor node based on an energy associated with the received signal, identify a first directional antenna from the plurality of directional antennas that received the signal with a highest signal-to-noise ratio, and generate a message for transmission to the second node, the message comprising information identifying the first node; and a transmitter configured to transmit the message to the second node using the first directional antenna. The combination of cited references does not disclose or suggest these features.

For example, none of the cited references discloses or suggests identifying a first directional antenna from the plurality of directional antennas that received the signal with a highest signal-to-noise ratio. Further, none of the cited references discloses or suggests a transmitter configured to transmit the message to the second node using the first directional antenna, as required by claim 41. The Office Action has not particularly addressed these features. Therefore, a prima facie case has not been established under 35 U.S.C. § 103. In any event, node of the cited references discloses or suggests these features.

In addition, even if, for the sake of argument, the combination of the alleged admitted prior art, Ramanathan, Beckwith, Asghar and Proctor disclosed each of the features of claim 41, the applicants assert that the motivation for combining these references does not satisfy the requirements of 35 U.S.C. § 103. For example, the Office Action states that it would have been obvious to combine Proctor with the other cited art "to provide a reliable communication link between nodes since the transmission/receiving energy is focused" (Office Action – page 13). Once again, the applicants assert that the alleged motivation is merely a conclusory statement providing an alleged benefit of the combination. Such motivation does not satisfy the requirements of 35 U.S.C. § 103.

For at least these reasons, withdrawal of the rejection and allowance of claim 41 are respectfully requested.

In view of the above amendment, applicants believe the pending application is in condition for allowance.

Applicant believes no fee is due with this response other than as reflected on the enclosed Amendment Transmittal. However, if a fee is due, please charge our Deposit Account No. 18-1945, under Order No. BBNT-P01-154 from which the undersigned is authorized to draw.

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Respectfully submitted,

By _____

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